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EDITORIALLY SPEAKING

A NATIONAL PROGRAM IN EDUCATION

Interest to an unusual degree attaches to the announcement made by President Owen at Cleveland that the National Education Association is creating a commission to develop an all-embracing program of public education. We have had various important educational commissions, such as the Committee of Ten and the more recent Commission on the Reorganization of Secondary Education, but never anything approaching the proposed commission in scope and importance.

The American way of carrying on is, everybody knows, in many ways distinctive. In education it is in marked contrast to the French system. In France education is centralized. Unification is obtained by means of official action and official direction emanating from Paris. Local communities have comparatively little autonomy. In England the situation is exactly the opposite; there is exceedingly little central control and a wide range of local autonomy. In America we have a large measure of state control, much local freedom, and like England little national control.

We do have, however, a remarkable degree of unity in our educational aims and procedures. This is brought about not by central official control but by means of our associations, publications, widely-diffused professional training, and the circulation of the members of the teaching population. This, most of us think, is a far more valuable type of unification than any centralization could give.

The National Education Association is a voluntary association of teachers and educators. It is representative — has recently become so to a very remarkable degree. It is in a position, therefore, to make a thoroughgoing study of our educational problem as a whole and this, we understand, is precisely what the commission which President Owen is about to announce will be expected to do. The commission will be doubly representative, since the members of it are being nominated by important societies in the various fields and divisions of education throughout the country. It ought, therefore, to prove one of the most far-reaching agencies of educational progress which have ever been devised in this country.

BACK NUMBERS WANTED

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CLASSROOM METHODS OF INTRODUCTORY SCIENCE

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Although educational method is about the same in all studies as to the fundamental principles of pedagogy, each study has special methods which are peculiar to itself, both in regard to the subject matter and in view of the object for which the course is being given. Especially is this true in the presentation of a course in introductory science, and the proper choice of methods will to a very great extent determine its educational value. Thus it must always be kept in mind that the course is introductory in its nature, and the emphasis should be kept upon this quality rather than upon the scientific aspect of the subject matter. If the introduction does not produce a favorable impression upon the pupils, and if it fails to arouse a desire on their part for a further acquaintance with science, then many of the possible advantages of the course have been lost.

Not only does each study require special methods, but these methods differ with the various plans of organization and vary according to the grade in which the course is to be introduced. The methods of introductory science, when organized around some center of interest, are different from those methods which would be satisfactory if the course were based upon some particular need, or if it were to emphasize some local, civic, hygienic, or other special and limited point of view. Again, if the methods which are effective in the ninth grade were to be applied in the seventh grade it might be expected that the course in introductory science would be in grave danger of failure. The methods which are to be outlined in this article are intended for pupils in the seventh grade, for a course in introductory science which is organized around the needs of the individual. Many of the suggestions may seem trivial and unnecessary, but if they are tried and tested they will be found effective and efficient.

LABORATORY WORK AFFECTS METHODS

Introductory science must be handled in a different manner from other courses in the grades because laboratory work on the part of the pupils is absolutely necessary.[1] For this reason there should be a much greater freedom allowed the pupils than is customary in the other studies, both of movement and of speech. This liberty may seem very undesirable at first to those teachers who are accustomed to the rather strict discipline of the usual class work in the grades. As the course develops, however, and the pupils gradually learn to make proper use of this greater freedom, the beneficial results will remove any fear of the lack of control, for the pupils will respond with an unusual amount of directed expression, both oral and written.

THE INTRODUCTORY TALK

Whatever plan may be followed in the presentation of a course in introductory science, one of the best schemes for the first day is to talk to the pupils about science in general. This talk should limit its subject matter to those applications of science with which the pupils are familiar, but it should also include a brief statement of the characteristics of science which distinguish it from other studies, illustrated by a few experiments to show the care which must be taken to obtain sufficient and exact evidence, and to avoid erroneous conclusions. It should not be the purpose of this talk to present a scientific discussion, but it should be so planned as to draw from the pupils a general expression of their experiences. In fact, the pupils may well be the source of much of the scientific material of the whole course, for thereby it will become vitalized and made a part of their everyday lives.

The talk should gradually lead to a consideration, also on the part of the pupils, of their needs. At first they will not be conscious of a large number of requirements for life and happiness, believing them to be very few and well defined. However, the list will rapidly grow and the needs will be found to be interwoven and overlapping, thus forming a complex but well-knit plan of organization for the subject matter of the course. A rather brief discussion will lead the pupils to the conclusion that their needs, including their desire for self-activity, may be grouped under the requirements for heat, light, air, water, and food, while civilization has developed the need for the applications of mechanics, electricity, and magnetism.

This introductory talk may extend over several days, according to the responsiveness of the class, and then slowly develop into the lecture.

THE LECTURE

Teaching is more than telling. While this is true in every branch of instruction, failure to recognize the difference will prove disastrous in teaching introductory science. It is so easy to tell a pupil something and so much harder to make him learn it for himself that too often he is deprived of the proper opportunity for development, repeating unthinkingly that which has been told

[1] "Laboratory Methods in Introductory Science," by the same author, will appear in a later issue of this magazine.

him. In science work this method will lead to failure, for in this study the conclusions are not worthy of the name if they are memorized, and a larger part of the value of the science course may be lost.

Although there is this ever-present danger, science instruction must depend to a considerable extent upon telling, that is, the lecture method must be employed. Two objections against the lecture method must be recognized: (1) it offers no scope for active and creative effort on the part of the student—he takes in but does not give out; (2) the note-taking that the lecture method involves frequently degenerates into a mere dictation exercise.[1]

These objections are valid, and care should be taken to avoid them in a method which may be made most effective.

The lecture in science for the seventh and eighth grades should be a lecture in form only. That is, the teacher stands before the class, which is watching and listening. The lecture, or talk, for it should be very informal, must be illustrated by experiments which in themselves teach the lesson; to the telling must be added the showing. The pupils must not be merely told, they must be led to see, and it does *not* follow that, because the pupils look at an object, they realize what it is or what it represents. While most educators agree that things educate, this education is only possible where the teacher causes the thing to have a meaning to the pupils. A mere exposure of the pupils to things, undirected by a capable teacher, will slow down science instruction until progress practically ceases. With proper direction the science teacher has at his command, in the use of things, a greater power for effective education than is placed in the hands of any other teacher. With these greater opportunities come richer possibilities and responsibilities that are not to be evaded.

During the science lecture the attention of the pupils should not be diverted by the necessity of taking notes. Notes should not be taken below the ninth grade, and then only on special occasions. If the subject matter of the lecture may be summed up in a few words, at the end of the lecture, these few words may be written in a notebook. In passing it should be noted that if the lecture can not easily be summarized it has not been a suitable one for the purpose. The summing up should be the result of the composite opinion of the pupils, directed by the teacher, rather than a nicely worded summary, scientifically arranged by him. In the first case the pupils become educated; in the latter case they are merely told, and not taught.

If the best results are to be obtained from the lecture in the seventh and eighth grades the pupils must take part in the work. There must be an immediate reaction if the lesson is to have a lasting effect. The talk should be inspiring and stimulating, thus keeping the pupils alert throughout the period. One of the best methods of causing the pupils to take an active part in the lecture is for the teacher to ask questions as to the probable results of the experiments before they are performed. Thereby is aroused a certain rivalry

[1] Bagley, *The Educative Process*, p. 271.

among the pupils in respect to their exercise of good judgment. Although the failures in the beginning will be many, there will be a constant gain in their ability to judge correctly, and the pupils will have been kept fully alive, at least to the work of the moment. The experiment should be performed, where feasible, through the use of the most simple material as apparatus. By its use many of the pupils will be induced to repeat the experiments at home, and their attention will be more easily directed to the scientific principles which are to be developed in the lecture, not being distracted by curiosity concerning the apparatus itself. Finally, the experiments which do not educate should not be performed. If possible, all experiments should interest, and some may amuse the pupils, but no experiments should be performed for the purpose of interesting or amusing them. The value of a course is proportional to the amount of *directed work* which it can induce the pupils to take part in or to do.

The lectures should not take more than one-third of the time which is to be devoted to the work of the classroom. Experience has shown that the best division of the five periods per week of science is one for the lecture, two for the recitation, and two for the laboratory work. There is a tendency on the part of many teachers to talk too much, thereby requiring the pupils to do little but listen. However, if the well-prepared teacher has acquired a proper confidence in, and a true evaluation of methods of teaching he will not make this mistake. A science teacher should prepare himself for each and every day, not only by reading books and magazines, both scientific and non-scientific, but also by acquainting himself with as many as possible of the practical applications of science. He should, by all means, plan his experiments for the coming lecture, testing them and leaving nothing to chance. A failure in a demonstration is much more unfortunate before a class of twelve-year-old pupils than it would be before a class of college graduates, and the negative educative effect is far more dangerous. A science teacher in the grades simply must not fail in any of his experiments. For this reason more care must be taken in the preparation for science instruction than with any other subject, and it is advised that the science teacher make brief notes of the day's work and experiments, arranging them in the order of their presentation. Where there are several experiments they should be so planned that they may be performed in the order in which the apparatus is placed on the table. No teacher need feel that the use of notes indicates a weakness on his part, and they may freely be shown to the pupils, for they will be impressive, since the well-prepared teacher can easily develop a topic from very brief notes.

THE USE OF TEXTBOOKS

While all science work in the grades should begin with the informal lectures or talks, the science work of the seventh and eighth grades should be guided by some text or texts. Since it is not advisable for the pupils to take elaborate notes during the lectures, they should have some storehouse of science, and

this is best supplied through the use of a suitable text. Textbooks, if written by experts in education, are likely to be the result of thorough consideration of the general facts of the learning process in the case of the subject in question, and so to be better adapted to the general run of pupils than all save exceptionally gifted personal teaching.[1]

Yet all textbooks should be used as guides rather than as the entire source of knowledge. If we take the real meaning of "text" we shall realize that the concise and well-chosen sentences of a good textbook should be amply elaborated in order to produce a satisfactory course. The skillful teacher will cause the pupils to supply this elaboration by drawing from their experiences, either obtained naturally in life, or artificially in the laboratory. When, to this contribution on the part of the pupils is added the practical knowledge of the teacher, the textbook will take its proper and valuable place in education. The learning and reciting of lessons from textbooks is necessarily an essential part of school work, but becomes more profitable when properly related to other experiences.[2]

The science books of late years contain valuable pictures and diagrams which teach, rather than beautify, although most of them are worthy of being called works of art. Thus a textbook supplies material which otherwise would not be available to many schools.

The greatest danger to real education, which may be attributed to the use of textbooks, is that of verbalism. In every study there is the temptation, on the part of the pupils, to commit facts, theories, and statements to memory, without much thought as to the meaning of the words used. Exactly the same danger besets personal teaching, without any textbook; removing the text deprives the pupils of the greatest single aid to education, and does not remove the danger. In order to function to the highest degree the text should be in the hands of *all* the pupils, and should be taken home if desired. The pupils require something more than the teaching. They must have something tangible, a connecting link for binding today with yesterday. It is too much to expect them to remember the past in the study of the present, and so the text should be a kind of repository of knowledge, guiding the present and reviewing the past.

The danger of verbalism is not so great in science as in many studies, as there are so many reference books and other sources of information which are within the reach of both the teacher and the pupils. The difficulty does not lie in any dearth of subject matter, but rather in selecting the suitable material with which to enlarge and broaden the child's outlook on life. It would seem that there might be a greater danger of verbalism if all of the instruction and information were filtered through the teacher, for no one teacher can possibly be as good as all teachers. The large majority of textbooks represents the compilation of subject matter and the derivation of ideas and theories from countless sources.

Some teachers object to the placing

[1] Thorndike, *Education*, p. 163.

[2] Caldwell, "The Textbook and Nothing More," *School Science and Mathematics*, Vol. V, No. 7.

of textbooks in the hands of the pupils, due to the fact that they might read ahead, thereby "skimming the cream" from the future work and causing a later loss of interest. It would seem that the desire of the pupils to see what is coming is in itself evidence of a proper and much-to-be-desired interest. Perhaps if interest is lacking later it may indicate that the work is progressing at too slow a rate, or that the teacher is not causing a sufficiently broad elaboration of the text. Too little work will more often kill interest than will any amount of previous knowledge of the subject matter. However, if this desire to run ahead of the assignment is considered too detrimental to the future work, the loose-leaf book, or the sectional book, may be used, but some sort of a textbook should be in the hands of the pupils.

The advantages of the textbook are further enhanced through a thought-provoking assignment of the lesson. The new work should be explained in such a manner as to arouse the curiosity of the pupils and stimulate their ambition to learn more for themselves. If there is not some instruction in the methods of learning science it will be memorized, just as is the oral instruction so strongly advocated by the opponents of the use of textbooks in the hands of the pupils.

THE RECITATION

Since the pupils' part of the work is tested to a very great extent by what they can say or do in the recitation, great care must be given to its management. It must not be forgotten that the recitation also should show the teacher wherein he has succeeded and in what respect he has failed. Mere facts are not the whole subject matter of answers to questions; they are easiest to learn and to recite, but are the poorest indication of knowledge on any subject. The questions should be based upon the experience of the pupils, secured both naturally in life and artificially in the laboratory and in the lecture room.

It is very desirable that the teacher of science make a list of the questions by which he intends to test the pupils' knowledge, in advance of each recitation. These will direct the work and also serve as a guide for reviews. If such a list is not prepared there is danger that the teacher will lose perspective during the recitation and miss many opportunities for effective teaching. Every talk which is given by the teacher, every assignment of lessons, every experiment which has been performed either by the teacher or by the pupils, must be tested for its educational value. In addition to these prepared questions the teacher should ask others, as they are suggested during the progress of the recitation. If the kinds of answers to these questions are carefully noted they will serve as a foundation for special educational method, and the teacher can then develop a plan of his own for teaching introductory science. This is the application of scientific methods to the teaching of science.

The style of the answers should be such as will produce the highest possible educational effect upon the pupils. *There must be a complete expression of the idea.* While in the beginning the

teacher may effectively guide the pupils in their recitations by suggestive questions, gradually all help should be withdrawn and the pupils compelled to make a complete statement. The Socratic method has its place in the lecture, and in developing new work, but in the recitation there should be less and less of "pumping" and more of self-reliant expression.

Science deals with things, principles, processes, and problems, thereby giving opportunities for narration, description, exposition, and argumentation. Clearness and force are easily developed in the science recitation, but unity and coherence are a necessity. The written reviews offer additional opportunities for acquiring a vigorous style of expression. Finally, since science teaching is not complete without the use of drawing as a means of expression, the pupils will gain a great facility in this art. Of course, in science the emphasis must be placed upon the *idea*, and not upon the accuracy of the drawing, according to the standards of drawing.

AIDS TO SCIENCE METHOD

Reports of various kinds by the pupils are effective means of securing good science teaching. They must to a great extent be formal and well planned. A few demonstrations may also be given by some of the super-normal pupils, but both reports and demonstrations should be limited in number, on account of the time required for their presentation.

The collecting instinct may be directed with great success toward the establishment of a science museum. The amount of really valuable and illustrative material which is available at little or no expense is astounding. The interest of the pupils is stimulated and they take pride in completing a set of material to illustrate a particular part of the science work. This means that they must think of science, that they must constantly be on the outlook for material, that they are benefiting through motivated education.

To a less extent scrapbooks are valuable. Of course, only part of the value of both the museum and the scrapbooks lies in the acquisition of material; the greatest gain is made educationally in the thought which lies back of the act of collecting. The pupils must exercise thought and judgment in their selection of material, and it is the exercise of conscious choice, the setting up of standards of action, which educate much more than does the material itself. The value of the science museum, collected by the students, and of the scrapbooks, made by the students, lies in their *directed* activity.

SUBJECT MATTER AND THE EDUCATIVE PROCESS—III[1]

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The preceding article undertook to point out in some detail the differences between two contrasted ways of conceiving and conducting education. For the sake of brevity we may call these respectively the older and the newer points of view. The account stopped in the midst of a survey of ill results that seem inherently to flow from the older point of view. It may help the present reader to give a brief summary of the findings reached in that article.

The crux of the contrasted positions was found in the opposed views as to subject matter. Other contrasted aspects were seen, respectively, to follow largely from these. Traditionally, subject matter has been conceived as primarily matter-set-out-to-be-learned and in explicit form for learning, with the idea that proper and actual use is to be deferred until adult life. Learning has thus pretended to look forward to adult life and to mean such acquisition as would stay with the child till the adult need should arise. But actually learning has too often meant for both child and teacher only such acquisition as would enable the child to pass satisfactorily the school tests, which of late years are increasingly devised along scientific lines. To study has accordingly meant to acquire in order to pass these tests. In this a frequent if not the chief emphasis has been on acquiring through bare repetition, with skills and information most in mind, and this to the relative exclusion of habits, attitudes, appreciations, and ideals, because these have lent themselves less readily to the available means of testing. In keeping with these conceptions the curriculum has consisted primarily of an organized succession of items needed by adults which it seemed feasible for children to learn. The textbooks, especially in this country, have been the repository of this curriculum. Pupils were supposed to "learn" (largely memorize) these books in some feasible succession, carrying several at a time, thus coming at last to "graduation," if they did not too soon leave school. Emphasizing the conception of subject matter as the crux of differences here contrasted, we may call this older position that of *extrinsic* subject matter, since the subject matter enters but extrinsically into the life of the learner while he is thus learning.

The contrasting position, the "new" view, the position of *intrinsic* subject matter, cannot be so succinctly stated, partly because it is essentially an effort to redefine almost all the terms involved. In this point of view the essential conception is experience, with attention on the one hand to the single educative experience as the unit element and, on the other, to the entire experience process as this is gradually remade by the educative effect of the successive experiences. Man as a behaving organism through interaction with

[1] Continued from the February issue. All rights reserved by the author.

his environment undergoes experience. In this process he takes and gives, he is recipient and actor. The exercise of one's old ways of behaving in some new fashion with attendant success (satisfaction) or failure (annoyance) changes one's ways of behaving, as modern psychology shows us. The making of such changes we call learning, and the process in which such changes are made we call education. Man is here conceived as the aggregate of his ways of behaving. Keeping this notion of experience continually in mind we can perhaps now better state the position advocated in the preceding article, the position of intrinsic subject matter.

The educative process is the experience process with its various inherent difficulties. Subject matter is intrinsically called for when some activity of the person is held up, hindered, or thwarted, and some new way of behaving is needed in order to get the balked activity going again satisfactorily. Study is the effort to find (and get for use) this new way of behaving. Subject matter has then two phases or aspects, first, what one studies (looks at, pays attention to) and, second, what one learns (a new way of behaving) as a result of the study. Since learning is a change in one's way of behavior, the test of learning is twofold. More immediately: does the person so get a new way of behaving as to start anew and satisfactorily the activity that has been hindered? More permanently: does this new way of behavior so enter this person that his subsequent life experience is therein and in so far remade? Education, then, from the point of view here advocated seeks to remake continuously to higher and finer levels the individual's experience process. It intends to begin enriching the child's life here and now, not waiting until the distant period of adult life to find results. In this point of view the use of "deferred values" (things learned now but only for latter application) is always a sign of failure in the teaching. Subject matter, study, and learning are thus intrinsic in the present life of the learner, being called into play precisely because the learner needs them here and now to effect some enterprise he has under way.

This attention to the present does not mean a disregard of the future. True, the child's insight into the future is but slight; and because he is a child it must be so. But the teacher should know the possible developments of present child experiences and their probable bearings on future experiences. With such knowledge tactful leadership will mean such continuous present enriching of child experiences as shall both mean most for the present and promise best for the future. Here arises the new conception of the curriculum. It is exactly this guided continual enriching of present life which promises also most for future continual enriching.

Having thus contrasted the points of view of extrinsic and intrinsic subject matter, we next asked what evil effects seem to follow inherently from the extrinsic use of subject matter. We first considered the content of learning. It was at once evident that as assignment and testing are the essential elements in the extrinsic procedure the content of the older curriculum has tended to reduce itself to things that could be both

assigned and tested. The emphasis thus has been on information and skills with more recent reachings-out toward knowledge, but with relative disregard of habits, attitudes, appreciations, and ideals, for these latter can hardly be assigned and can as yet be but meagerly tested. That it is a very great evil thus to curtail the content of the curriculum will be evident to anyone who will but consider such matters as moral character, citizenship, refined tastes, and the like. All of these, true enough, need knowledge and skills; but to base them only on knowledge and skills is to leave them essentially empty. And our new scientific tests seem just now to be increasing this evil, because they can so well measure the more mechanical outcomes and so inadequately measure the others. A further evil in this connection is the tendency to reduce education to the low levels indicated by the worse meanings of the terms propagandism and indoctrination. That the man in the street is inclined so to look at education is evident in the passing of laws prescribing what shall be taught in the effort to use the school for propaganda purposes.

This point marks the end of the preceding article. We are now ready to proceed to the second head of evils arising from the older point of view, which is here numbered consistently with that of the preceding account.

2. The second line of evils resulting from extrinsic subject matter with its assignment and testing procedure is the effect on the child's methods of study.[1] Most obvious is what is called "cramming." By general consent it is quite possible to prepare for examination by a process that leaves fewer abiding good results than does intrinsic study in the field. Skilled coaching, it is said, facilitates the process. Such a process of so-called learning seems to depend on a clever substitution of memorization for matured thought organization. It often makes shrewd guesses as to what may be expected, following the examiner's known lines of interest, and to this end back examination questions are for such study almost an essential. Let it not be said that such scientifically made examinations as the "true-false" prevent cramming. The discussion here given is based partly on observation of advanced graduate students working at most excellent examples of the newer type. Memorizing is still stressed at the expense of matured thought organizations such as is demanded and got in intrinsic learning situations. The most extreme form of evasion is cheating, which of course obviates the necessity of learning well any of the prescribed subject matter. In whatever form we find it, the emphasis on extrinsic subject matter with reliance on specific assignment and examination is almost certain to distract in some hurtful measure from the real intent of subject matter, namely, to make over experience. At the best the distraction may be slight for students of the pronouncedly intellectual type. At the worst the pupil is

[1] It is not here claimed, it could not be claimed, that all who have studied under the assignment and examination régime show equally the ill results here pointed out. Some exceptional pupils have at all times risen superior to the temptations which have trapped their less fortunate comrades. (The discussion on "Coercion and Learning" in this JOURNAL for January and February, 1922, may throw some light here.) The favored few may make intrinsic subject matter out of external assignments. But it will hardly be denied that the evils here indicated are present as tendencies in greater or less degree in all but these exceptional few.

incited by any hook or crook to "beat the game," to "get by" with a minimum of reorganization of the new subject matter into its manifold possible connections with the old. Between these two extremes lie the majority of our pupils and students.

It may be pointed out in passing that those most anxious to evade the instructor's aim do not thereby evade the analysis here made of intrinsic subject matter. They do but illustrate the inevitability of that analysis. For in order to evade — on any basis except absolute inaction — they must study the instructor, his probable demands, and the working of the examination system. This then becomes for them their subject matter and it at least is intrinsic in their experience. Critics of the position herein advocated may well take this to heart, and ask themselves what they are going to do about an analysis that cannot be evaded. If its application is inevitable, are they content to let it work against them? Or will they join forces with us who advocate that the school curriculum and not artificial school demands be the intrinsic subject matter studied by our pupils?

3. What, we may next ask, is the effect of assignment and testing on the teacher and his teaching? Are there any ill effects here? On the one hand it may be admitted at once there are very weighty considerations that seem on the face of it to call for the assignment and testing treatment. If teachers do not test, how can they know whether they are succeeding? How otherwise can they improve their own practice? So stated, the argument is good. Teachers should avail themselves of all feasible means of ascertaining how well they are succeeding. But when we consider the assignment aspect, the argument is not so simple, especially if some one else sets the examination. If this some one else also has power over the teacher's future welfare and will use the results of the tests as a basis of approval or disapproval, the situation is made much worse. It is still further worsened if there is a nicely prescribed course of study with precise statements as to when certain stages must be reached.

First, the teacher ceases on this basis to be a full person. The thought and decision as to what the pupils need and when they need it is removed from the teacher and located now in the makers of the course of study and particularly in the examiners whose questions really define the course. The teacher thus becomes one who carries out orders, not one who shares fully in a vital process. The essence has gone from the experience. The real ends are set up by others, and accordingly there is by the teacher no devising of means adequate for attaining these ends. No wonder that the teacher's devising under such circumstances becomes one of "devices." What use have such teachers with knowing the why of education itself? Some one else has done all this thinking for them and handed down the bare results as so much prescribed procedure. Anyone who has ever discussed general principles of education with teachers so unfortunately situated will recall their hopeless "what's-the-use" attitude. Teaching under such conditions is made mechanical. Sooner or later it inherently becomes drudgery.

Some teachers dully accept a routine grind as fate. Others become resentful, perhaps without knowing exactly the reason why. Superintendents who wonder at teachers' unions and general antagonistic attitudes may find many grounds of unrest; but one most widespread is the point here being emphasized. The factory system of giving "hands" a mechanical routine without conscious participation is bound to provoke unrest. Democracy will not permanently be flouted.

The rejoinder to this is, of course, that present available teachers are not competent to be trusted with general principles of education. They are not equal to full participation in directing the educative process. We must, we are told, at all costs protect the children. That there are "teachers" who cannot be trusted to guide the educative process is only too true. But is this a sufficient reason why none should be trusted? Those who can operate on the higher plane should have every encouragement to do so. Moreover, if teaching were more satisfying, stronger people would be attracted to the profession or remain longer in it. Still further, many now in service cannot be trusted, merely because they have not been trusted. They have not been allowed to grow on the only basis of growing, namely, the practical exercise of responsibility. Administration must find a way of opening the door of self-direction and participation to all who can profitably use it. On no other basis can either education or democracy be adequately served.

The situation above described is made worse from the fact, already several times noted, that "facts" and skills best lend themselves to external examination at least as examinations have hitherto been devised. It is the very strong feeling of many in indisputable position to judge that our modern tests and measures as administered by some central examiner may serve actually to penalize the teaching of the finer aspects of attitudes and appreciations. The emphasis on tangible examinable results that can be put down in tabular form, comparing teacher with teacher, school with school, and system with system, is so compelling that few can resist. The normally sensitive teacher can hardly withstand the pressure. Her teaching attention, if originally sound, is little by little withdrawn from attitude and appreciation and put where it can disclose results — on fact and skill. Under such circumstances back examination questions form the teacher's intrinsic subject matter. In New York state, where under the Regents' system the acme of these ill results seems reached, it is notorious that many teachers do not even own the state syllabus of instruction, but spend their entire time as drill masters cramming their children on compends of back examinations. So low can a bad system bring our profession.

In another place[1] the author has made the distinction between the narrow or specific problem of method and the broad problem of method. In the former the question is, how does the child best learn some specific thing, as spelling, for instance, and how accordingly shall we best teach that thing?

[1] This JOURNAL, September and October, 1921, April and May, 1922.

The broad problem considers and accepts the fact that the child is during this spelling lesson responding, at least marginally, in a great many ways besides to his spelling. He responds to his seat and desk by sitting in some fashion or other. He responds in some manner or other to his fellows and their nods and winks, their failures and their successes. He responds to the subject of spelling as an object of like or dislike, and so also to his teacher, his classroom, his school and school life. He responds to the thoughts of himself with esteem or the opposite. And so with many other responses, as a sense of justice, of fairness, of rectitude, etc. Now out of these attendant or marginal responses grow for the most part the attitudes and appreciations of life which make up so large a part of what we call character. Among the determiners of these attendant responses two stand out as well nigh supreme: the teacher's way of managing affairs and the child's attitude toward what he does. The second of these is, of course, effect as well as cause. The broad problem of method accepts the inevitability of these manifold attendant responses, values them as among the principal roots of character, and demands that the school and the teacher take adequate account of them.

The extrinsic subject matter theory has virtually assumed that we can make a list of the things (traits) needful for the adult to know and teach these successively to the child, using for the purpose only the narrow or specific problem of method. But not all traits can be assigned — appreciation, for example, or respect for others. Such must be acquired incidentally. The result is that in the degree that the extrinsic subject matter, the assignment-testing theory, is accepted, in that same degree is the broad problem of method overlooked. Only those things are stressed which can be assigned, and again does teaching sink itself under administrative compulsion to mechanical levels.

We may conclude then that, in the degree to which the emphasis is put on prescription and testing from above, in that same degree does the heart and essence of teaching depart. Education is essentially a vital process — a living and a growing. That this may best take place, the real teacher must be sensitive as an artist to the stage reached and to signs of growth in the children. Adjustment of child and activity is so delicate a process that it cannot be foretold in advance as is demanded with the prescribed course of study and external examination. Deciding what next to do must be an activity shared by teacher and pupils. The teacher as the mouthpiece of authority has of course the final word. If the teacher and pupil are to work best and grow most in the living, they must exercise, under authority, real responsibility. On no other basis can the educative process really proceed. The teacher must study and must utilize the best that the experts have to give; but the final and real curriculum must be made on the spot and as it is used. In this the teacher's eye must be on the present growing of the pupils, not on some examiner's report. And this growing means intrinsic, not extrinsic, subject matter. Preparation for external tests and real teaching are inherently all but mutual exclusives.

4. We have considered the tendency effects of the assignment-testing theory on the content of subject matter, on methods of study, and on teaching. We next ask as to the effects of this theory on what is learned. What does the child really learn under such conditions? Again we can consider only tendencies, for learning is a strong natural tendency and the love of learning can, particularly in the most capable, survive many a discouraging circumstance and surmount all but the worst of theories.

One thing we can say the children have learned, and that is how to work the testing system. As was pointed out above, the one place where the assignment-testing régime uses intrinsic subject matter is where the children study the teacher and the scheme to find out how to meet the demands made. It is probably no exaggeration to say that the ordinary school child gives his best school thinking to a study of each new teacher and of how to manage (without excessive study) each new subject. Since this is a common problem to the pupils, we often find that the common effort has a strong socializing effect. This was particularly true in the good old days of unabashed coercion. A strong gang spirit — often called class spirit — was early built. As a social project this beating-the-teacher-game was in that day a great success. But it hardly strengthens the extrinsic subject matter position that its best learning is found where intrinsic subject matter holds sway. To point it out is perhaps a foul blow. We'll pass on.

It hardly needs argument to show that what is learned for mere test or show purposes must fail somewhat of the quality and connectedness which intrinsic motive and actual life practice alone can give. The laws of learning could hardly work otherwise. What young man gone now into business does not find himself learning in a tithe the time, with almost no possibility of forgetting, business arithmetic processes more difficult than those he worked on laboriously in school only to forget soon after he had passed the test. What teacher has not said, "Why, I never understood this till I had to teach it." A young woman who remembers only dimly that she worked at household accounts and budgets in the high school, when she faces the responsibility of making her husband's slender salary suffice first for two and then for three will learn day by day so rapidly and so permanently that she seems to have entered another world.

It may be replied that these things while admittedly true are inevitable. Possibly so. But surely such considerations at least raise the question as to whether we are teaching aright. If life does teach so much better than the school, why not seek to profit from the fact and improve the school if possible? However we take it, consideration seems to show the superiority of intrinsic subject matter.

But let us attack the citadel itself. Does the assignment and testing theory work? Does it prepare the child for life? Does the adult meet his situations by recalling and applying what he learned in school? To some extent? Yes. To a great extent? The answer is at least doubtful, except as the adult

used the material learned in childhood to make over his life then and there. Material merely held for later adult use comes but little into use. And how could it be otherwise? The curve of forgetting can hardly teach any other lesson: unless the material is used in some fashion it will tend to drop out. It is hardly fair to cite the common opinion. Most people reach their opinions too carelessly. Nor is it entirely fair to cite certain survey reports, the arithmetic actually used by Boston business people or the actual spelling of Cleveland business men. The older curriculum may have been at fault in its foresight as to what the adult would really need. Take some other matters — science, literature, citizenship. The data submitted is not scientifically conclusive, but consider it. Do our people think scientifically? The answer seems no, even for high school and college people. How many of even these avoid 13 and Friday as unlucky, or "playfully" knock on wood, or believe in "luck"? How many of them use patent medicines or accept Christian Science or advocate "anti-vivisection"? How many of them appreciate what an experiment is or wish to try one with scientific care? The only answer seems to be that the older science teaching has not "sold" itself. And no wonder, being what it was, so exclusively concerned with having pupils acquire predigested learning that it never really taught any but the exceptional few. It even mechanically ordered "experiments," forty a year, as if this were not too patently ludicrous to be confessed. And having ordered them, it perforce supplied its own order by furnishing "laboratory manuals" which dictated each step. Imagine teaching tennis by prescribing in advance of the game each stroke, order and all, the player should make during that game!

Or consider literature. Is there a better way to kill a fine piece of literature than by teaching it in the high school? And must not this always be so, so long as "teaching" means preparation for some test instead of helping a child to do better what he would otherwise do worse? If we could think of teaching as enriching the child's present experience as he counts enriching, we should set different aims. But at this some one will raise his hands to heaven: "Are you going to let the child decide what he counts as enriching?" Exactly no, but the point of attack must be *his counting*. If I do not elevate *his* counting, I have not succeeded. For whether I like it or not, that is what he is going to follow. It is *his* counting that avails with him. And my efforts to change his counting will go wrong just as soon as I seem to him to disregard his present counting. Remaking his counting is a continuous process that stays continuously in greatest measure within his counting. As soon as I see and accept this limitation, my whole outlook on teaching is changed. Assignment of "deferred values" for testing becomes to me a wholly artificial process, destroying the vital processes both of living and of education. And these two, life and education, become one so soon as I open my eyes to see what life abundantly teaches.

The case for citizenship is even stronger, but need not here be elaborated. How can we teach civics apart

from building character? And how can we build character except as we give character a chance to enjoy social relationships and assume social responsibilities? And what better preparation for character building at 25 or 20 or 16 or 10 years of age can we imagine than the best possible development of character at 24 and 19 and 16 and 9? And character considered in the light of the demands on it then and there. To "teach" children mere adult values in matters of character building would win few supporters. Surely no one would care to deny that character building is a continuous process which best prepares for the future exactly by first caring for the present. Again the teacher sees further ahead than the child, but the point of attack is the present situation primarily for the sake of meeting it well. So civics is first the relationship of child with child and is at all times primarily intelligent conduct appropriate to the situation at hand.

But this kind of civics refuses to fit the assignment-testing theory. It will not even come to life in a school run primarily on such a basis. Assignment and test mean here as elsewhere a one-sided stress on "fact" and skill. Such attitudes and appreciations as constitute civic character simply cannot be assigned on the extrinsic subject matter basis, nor can they be tested by processes devised on that basis.

In conclusion then of this head, it seems inevitable that both content and character of learning must suffer so long as we choose a basis of teaching that denies the psychology of the learning process and refuses to consider some of the most important traits. So long as teacher and administrator think that the assignment of tasks is the only way to introduce subject matter, and the passing of school tests the only proper aim and criterion of success in learning, so long must we fail to get from most the learning that we need. On any régime of assigned tests attention is inherently and permanently misdirected.

5. While the moral character effects of the assignment-testing theory have already been much stressed, a few words additional may not be out of place.

That attitudes enter largely into moral character no one would care to deny. That attitudes are built largely out of marginal responses seems equally true. That a régime of the assignment of tasks not only tends to ignore these finer non-testable elements in teaching but may even penalize the teacher who regards them was brought out above. We saw further that cramming may assume at times the form of cheating. We may now go further and say that the very intent to cram is at best hardly consonant with moral wholeness, while in its worse but still common forms it allies itself very closely with moral crookedness.

The last point is so important as to require special emphasis. Morals at bottom mean social relationship, and that not merely or even primarily of form but essentially of spirit. Any scheme of living that essentially puts teacher and child in opposition during ten or more years of the child's life can hardly fail to build anti-social attitudes. It is almost inevitable that the assignment-testing theory should mean to many, if not to most, such an opposition. The child is making his attitude

toward government and the larger social whole during his entire childhood. Whether he is to think of government as the effort of all to make life best for all or the effort of the strongly entrenched to thwart individual inclinations, — which of these views he is to take is being built all through his formative period. The assignment-testing basis has in the past certainly made only too frequently for such an opposition between child and school. Anything that lessens a sense of opposition between teacher and pupil is in so far good, and promises better for a healthy outlook upon the wider social coöperation we call government. Intrinsic subject matter tends to make an ally of the teacher just as extrinsic subject matter tends to make an enemy of him. To live one's school life on the one basis rather than on the other must surely have an abiding effect upon the child's character and outlook.

This last point may be stated in another set of terms. The general tendency of the assignment-testing régime is to produce a state of divided attention, one part directed toward outward conformity, the other toward forbidden inclinations. To spend a large portion of one's life on such a basis is to build a divided self, a situation inherently immoral. There is more than a verbal connection between wholeness and holiness, as far apart as we have by custom put them. The good life is essentially a whole — unified, frank, and open. It "looks the whole world in the face." But the divided self is leading essentially a double life. The argument will not be pressed, but surely there can be no question that a divided self represents at least the legitimate tendency for many, if not for most, of a régime where testing to meet somebody else's standards plays so important a part. Certain ills of modern social and political life seem very closely related to this evil. From many points of view morality finds itself questioning our unnatural régime of assignment and tests.

A word of caution is perhaps necessary in conclusion. The indictment here made is presented rather as an indictment than as a vindicated judgment. The educative process is too complex for all its essential factors to be laid bare in a few pages. Moreover a procedure in place of that here attacked is work for the future and bristles with difficulties. But the evils here discussed seem, at any rate on the face, to be the inherent results of the system indicted. That these results are complicated by other factors is undoubted. But after all needed allowance for such has been made, does there not remain a real indictment? Must not the thinking educator at least stop and consider? At any rate the contention here made is fundamental. If the position outlined be accepted, must not American education reconstruct itself fundamentally? In particular does not the question here raised become, until disposed of, the prior question in any thoroughgoing curriculum study? So far as the writer can now see, neither the problem of method nor the problem of the curriculum can be solved till the question here raised has been settled.

MY MAN WHO IS TO BE[1]

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What I wish to say is addressed primarily to high school pupils, to others of similar age, and to any others of any age who yet retain the splendid ambitions and hopes of youth. At the outset let the young persons be assured that they are not the only ones who look anxiously and expectantly toward the kind of human beings whom they hope to be. A few decades of experience with older men and women leads me to conclude that practically all of them almost constantly look into the more or less distant future with eyes fixed upon the particular kinds of men or women whom they are to be. The more constant forward look of older people often seems to focus their sight so that their vision of what they wish to accomplish becomes more clear; also their more constant efforts to progress in definite ways have often served to lessen the distance between them and their goal. Peculiarly, however, this future personage, though becoming somewhat more clearly defined as we approach, evades our approach and, as in the visions of our sleeping hours, always remains beyond our reach. This topic, "My Man Who Is to Be," belongs to older and younger persons alike, and needs to be considered not in terms of advice to the younger generation, but as a topic which should be one of common discussion.

Two illustrations may serve to present the situation in contrast. A few years since, it became my pleasant task to assist in an entertainment which was given in honor of Captain Roald Amundsen, the Arctic explorer. After the dinner Captain Amundsen spoke. In a most unobtrusive way this highly respected geographer and explorer said that he had descended from hardy Norsemen who for generations had held the ambition to solve the riddles of the frozen Arctics.

"Three times," he said, "have I gone into these regions, and though much has been added to what we know, my trips have not yielded the knowledge that was sought. I am impelled to go again. I would rather die while endeavoring to solve these problems, than to live comfortably by deserting the task."

Thus Amundsen is again on the Northern Pacific. He sailed from Seattle on June 1, 1922. His steamship *Maud* has been strongly constructed of timbers and steel with the hope that no amount of jamming in Arctic ice can possibly destroy her. Amundsen proposes to sail as far as he can into the Arctic ice from the westward during the warmest season, then allow the ship to freeze solidly into this ocean of ice. It is known that the Arctic ice moves eastward slowly and it is believed that in four to seven years the ice which forms

[1] A talk delivered before the graduating class of the high school division of the Lincoln School in June, 1922. It was designed entirely for young people and with the hope of helping them to define clearly the kinds of service which they should be ambitious to give. In reading it one should keep in mind the type of audience and the particular objectives associated with the address as given.

to the westward flows eastward across the polar region and eventually into the northern Atlantic Ocean. This intrepid man, now advanced in years, is on a journey such as few men would relish — all to accomplish a task and give to the world knowledge which has been his life's ambition and that of his kind. We shall hear from him occasionally for some months. Then, if his plans are successful, in some five, six, or seven years, you may pick up your morning paper to learn that this man of gigantic resolve has emerged in the Atlantic. Following that, another five years will be required before modern records shall possess an interpretation of what Amundsen may have achieved. Picture the task! This year's high school graduating classes left school as Amundsen's journey began. They may go to college for four years, graduate, we trust, and then spend a year or two in helping a needy world, while Amundsen's party works slowly forward. All of this time Amundsen and his men in a ship frozen in the northern ice may patiently move eastward, and patiently make the studies for which the trip is designed. If Amundsen fails it will probably be with his face set toward his chosen achievement, and after having done all that his energy and that of his men can do to accomplish a lifelong purpose.

My contrasting illustration is more brief because it is depressing instead of exhilarating, and also because it is more common, and thus better known. Recently, I received a call from a young man from the western coast of this continent. This young man's father was one of my esteemed friends until the father's sudden death. His son has inherited property, family standing, intelligence, and wonderful personal and social charm. He is bright, has clean language, does not swear, smoke, or drink, abhors ugly stories — indeed, does not have the absurd small vices which advertise so many young men as worthless.

More than a year ago there was a similar call from the same young man on the same mission. He had then been "dropped" from a well-known Eastern college, as is now true again. Then, as now, I asked him as to the cause and what he proposed to do. House and hotel parties throughout the year — some in New York, some in Boston, some in Atlantic City, one in Minneapolis; dances, flowers, automobiles, theatres; fine books, purchased as he intimated "to show the faculty" that he could own as fine books as could they. In his foolishness he confused property ownership of books with intellectual possession of their content. He is now "done with college"; says he may go into coal mining; or may turn civil engineer or business man; but first wants to "spend a few weeks visiting and resting." Picture the hardships of one who cannot possibly be truly tired, trying to rest. Picture his indecision, his restlessness, aimlessness, the tragedy of his splendid inheritance trifled away by a fellow who is going nowhere, because he has set himself no objective toward which he proposes to direct his efforts. People who start nowhere usually go nowhere.

Between these two extremes most of us are distributed. Few have so clear a vision of what he wishes to do as has

Amundsen, more of us approach the indecision of the young man who saw in his future no particular man whom he wished to become. Indeed, too many of us possess not only indecision but have accumulated more or less of those habits of weaklings — endless small talk, cigarettes, swearing, ugly stories, backbiting and mean gossip, jealousy and selfishness, which too often are the evidences of illy-defined or undefined purpose in life.

What do *you* wish to do? Or, is there *anything* which you wish to do? Do you know the story of Mr. Maydo, the hammer maker of northern New York? It was almost a century ago when this sturdy old blacksmith pounded out his hammers upon his own anvil from steel tempered by his own hand, with the eye, hand, and heart of a man who constantly thought, "How can the very best hammer be made?" Mr. Maydo fashioned the steel, finished it, and polished it. If in any point the product was below his best, he placed the imperfect hammer upon his anvil and, with a heavy stroke of the sledge, he demolished it. When told that the imperfect hammer might have been sold, he replied, "The name of Maydo must never be sold on any hammer except the best I can make." Today hammers still sell under the old family name of Maydo, because the man stood for an ideal, and the man became known as the ideal.

Do you remember George Eliot's statement about Stradivarius' violins? The question is asked, "Does not God guide the hand to make the violin?" And old Stradivarius replies, "God could not make Stradivarius violins without Stradivarius."

It is so with each Maydo, Stradivarius, each true poet, singer, teacher, business man, worker in any worthwhile work in the world. No power can make Maydo's hammers without a Maydo, nor a Stradivarius violin without a Stradivarius.

Work of high type is created by the worker, and the worker himself gradually takes character from the work. Men become like the work they do. If it is fine, useful, enduring, beautiful, unselfish, they gradually become fine, useful, beautiful, unselfish. "The song is to the singer and comes back most to her. The oration is to the orator and comes back most to him. The murder is to the murderer, and comes back most to him." Remember that the purpose, quality, and refinement of your work will come back most to you. It reappears in your face, in your walk, in your very presence, and sooner or later to those who are discerning, you and your work are alike — are one. Be careful what you wish for; if you wish for it hard enough and long enough you will get it.

What are you to be? What is the particular work you are going to do? What is its service to mankind? Your man who is to be, what and who is he? If you are not he, he can never be. If you fail in ideals, in will power, in service to men, your man whom you wish to be can never be. Your man or your woman who is to be, you must be, else you and the world have lost that man or that woman. The world has other chances, for some one else may become like your man or your woman. You have no other chance. May your vision of your service keep clear in your mind.

May your intelligence and your will be strong to make you use your energy toward the purpose you have chosen.

In our modern times, with much confusion everywhere as to human ideals, tasks, and opportunities, we need to recall again that service to others is the supreme commitment of mankind.

POSSIBLE APPLICATIONS OF THE PROJECT IDEA[1]

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The proof of the pudding, to be sure, is in the eating. Whether the project idea shall assist or hinder educational progress will depend in the end upon what applications are made of it. Either the idea will be used with discrimination, insight, and due regard to particular conditions or it will be treated as a universal panacea, a substitute for brains and honest work, and a reform to be worked wholesale regardless. There is in reality little danger of over-enthusiasm and excess of zeal. Tradition has a way of going serenely on, undisturbed by such flurries of new thought as occasionally assail it. New names do come into use in America very readily, but alas, too often they designate what are in fact the same old practices. On second thought we conclude that one can afford to let his zeal for the project idea burn rather fiercely. There is no great likelihood of a stampede.

SUCCESSIVE DEGREES

Two general policies as to the application of the principles of the Project Method suggest themselves. In pursuance of one we should at once undertake to reorganize all school work in terms of "projects." Whether this would mean abolishing the present so-called "subjects of study" and substituting for them "occupations," "life-units," inclusive projects in work and play, is not clear. In some experimental schools programs not unlike this have been carried out. The reader will easily recall examples. Few are in a position, however, even if they deemed it wise, to depart so radically from the beaten path. The higher the grade, moreover, the more difficult it appears to be to do so, until indeed you reach the seminar in the graduate school.

The other tack may be sailed by all. It is marked by honest endeavor to be governed by the project idea in any way and to whatever extent seems possible and desirable under the circumstances. Those who choose it expect to improve with practice, to learn by experience how far to go, and thus gradually will replace external direction with self-direction without sacrificing the orderliness and selective character of the life of the school, nor the advantages to be gained from the organization of knowledge and the indispensable disci-

[1] All rights reserved by the author.

pline of hard work. They will make haste slowly and maintain the pragmatic attitude throughout. Good men and true have grown up under the old régime — either because or in spite of it — and may be expected to do so still. There is time to test each step before taking another.

Passing from the more certain and obvious to the more difficult and external applications of the Project Method, we shall discover some such a sequence as this: 1. The improved assignment and more effective direction of study. 2. Motivation of all types of learning, including drill. 3. Project units identified more or less completely with particular subjects, though often employing other subjects as means. 4. More inclusive undertakings, carried on without special regard to any one subject and often designated as extra-curricular. We will consider each of these in turn, regretting that requirements of space prevent anything like adequate treatment.

DIRECTION OF STUDY

The teacher is under obligation to make sure at least that the student knows what to do and how to do it. This is by no means always the case now; almost anyone who visits classrooms frequently will tell you so. Perhaps teachers under-estimate the difficulty of the tasks they set, or depend upon the textbook, or simply do not think about the matter because they also were unguided; whatever the cause, they undoubtedly fall short at this point. Their pupils frequently do not know what to aim at nor when they have succeeded. In arithmetic the pupil tries for the answers; in history, to remember the facts; in reading, to get over the words without stumbling. Consequently there is too little cumulation of the power that will presently make the student a relatively independent worker. He gropes blindly from day to day and only slowly, if at all, comes to the light.

A young man with a college education but no training in teaching passed the examination for high school teachers and was assigned to mathematics. He was soon in trouble. Some of the students were stupid or lazy; they were failing in algebra — ought to be dropped, in fact. So he reported. But the principal had his suspicions. He looked in on the class. Then he invited the worst offenders to come to his home of an evening. He took up as a whole the section of the algebra in which they were working, and helped the students to see what it was all about. Three or four lessons sufficed. Soon the laggards were leading the class! Then the principal told the young greenhorn how it was done. Lucky pupils, to have such a principal!

Part of our difficulty in this connection has been due to our inadequate knowledge of the processes involved in the various school activities. Our psychology was at fault. Fortunately recent scientific investigations have added enormously to the stock of existing knowledge in this field. Little by little we are coming to know just what has to be learned and how it can be learned most economically. No conscientious person will spare any reasonable effort required to master this knowledge, at least so far as it concerns him and his work.

The project idea is a great stimulus in this direction. How can a person lead others unless he himself know the way? Certainly the pupils must understand what the enterprise is and how to engage in it, no matter whether they regard it as worth while or not.

MOTIVATION

But most educators will now contend that the pupils will accomplish more if the enterprise does seem worth while. True there are those who persist in confusing interest with ease and the advantages of doing a disagreeable job under external compulsion with the benefits to flow from doing it of your own accord, but their numbers grow steadily less. Few now are consciously guilty of setting what they believe to be meaningless tasks.

Many school tasks are, however, relatively meaningless, and one of the pressing pedagogical problems is how to make them less so. All project teachers are of course deeply concerned with this. Accepting whole-hearted purposing as central to the doctrine, they must inevitably seek to establish conditions most favorable to it.

So far as possible they will enable their pupils to strive to secure the control of values that are intrinsic, that satisfy typical human needs in typical ways. From this point of view the instruments of thought and expression tend to be brought into direct relation with the ends they are intended to serve rather than to be handled formally and in complete isolation.

Thus children write letters *to* somebody; they study the words they have occasion to write; they make calendars and bookcases and serve lunches; they "get up" biographies and learn poems for anniversaries; they practice making change and computing in order to act as cashier for the milk committee or bookkeeper for the class entertainment; they give accounts of their reading in order to aid others in finding good books and in enjoying them, and so on through a long list. We have come far on this road in recent years. Some think we are in danger of going too far. Not certainly if we retain most of the subject matter we now have. By no possibility can a good deal of it be made instrumental in any real sense in the lives of the immature, perhaps of anyone.

But in any event project teachers will do well to be on their guard lest they overemphasize some one class of motives. Undoubtedly the joy of learning is worth while in itself and, as Woodworth points out, provides, once the activity gets to going smoothly, all the "drive" required. The danger is, of course, that our skill as drill masters may enable us to teach the less important while the more important waits, or that, what is worse, our pupils may become almost wholly dependent upon us. We must put first things first.

SUBJECT UNITS

This is why we regard motivation as inadequate and why we seek to go beyond it to complete project units. The nature of such units has been set forth in previous installments of this series of articles and need not be elaborated here. Suffice it to say that all of the elements of a complete, active experience are provided for. The pupil not only sees the goal and desires to reach it, he chooses

the means, goes forward intelligently with self-directed effort, judges his own progress, and appreciates whatever measure of success he wins. Often he does all this as a member of a joint student enterprise; he works coöperatively, with others; and he seeks and welcomes guidance and criticism from the teacher. Very often what he does leads on to other like fruitful enterprises, so that even before one activity is completed, another is in contemplation. He learns many things by the way, not the least of which is to say with Kipling, "That is another story."

Note again that such enterprises are not restricted to one particular field of learning. Wherever the learner's purposes may point, there may his heart go also. He may use chisel and plane, or he may merely gaze on the printed page; he may be concerned with the laws of nature or quantitative conceptions of his environment, it matters not so long as his mind is set toward his goal and he knows how and why he is working toward it.

Such experiences are educative. They are not the only sort that is educative but there is probably no other so much so. With due regard to what is most important to be learned, the modern teacher will seek to provide the opportunity for as many of these units of experience as possible. They may lie largely if not wholly within the field of a single subject, and in the present state of our knowledge and school organization this is the type of project with which most teachers should be chiefly concerned. Usually other subjects will of necessity be brought into play, but the organizing purpose will lie in the particular field of study chosen.

Excellent examples of such projects have been reported in most of the elementary subjects and several of the high school subjects. It is notable that the newer disciplines like science, agriculture, and household arts seem to lend themselves more readily to the constructive type of project activity. At the other extreme subjects like algebra, of comparatively little use in everyday life, have been approached rather from the drill side, in an attempt to arouse enthusiasm for reaching certain definite degrees of skill, to beat one's record, and the like. So far as the Project Method *merely as method* goes, one is as good as the other. The question as to what the pupils should be learning, we say again, is a question for the curriculum-maker. But obviously studies like Latin and mathematics, long organized for instruction in a highly formal manner, are more difficult to adjust to pupil planning than the concrete activities of daily life.

Nevertheless progress is being made. This will be aided by the growing tendency to prize permanent interests and appreciations quite as much as definite acquirement of knowledge and skill. Mathematical clubs and Latin plays are no longer doubtful. Ancient history, it is found, may actually serve to explain problems of the present. Chemistry has finally reached the kitchen and physics helps to dispense with the plumber. English grammar aids daily speech and rhetoric enables one to get his geography lesson better. Little by little the formal knowledge which the schools have sought to pass on is finding

its true place in the scheme of things. No teacher need go through the entire term in any subject with a mere abstract lesson grind. Examples of a better way are at hand.

MORE INCLUSIVE ENTERPRISES

Much of the best modern school life, however, comes under the head of "extra-curricular activities," though significantly enough what is extra-curricular today is often curricular tomorrow. Here may be classified the school play, the school newspaper, athletic and other clubs, auditorium programs, playground organization, community service, and many more. All of these offer the opportunity primarily for doing things rather than learning how others have done them, though that is by no means barred. Since grading and promotion are not usually involved, teachers are less solicitous as to whether their charges attain what some one has aptly termed "examinable minds," and seek rather to help them do some concrete thing well. The result is probably a better balance between abstract learning and motor control than we have had, plus a tremendous accession of social experience that is beyond all price. Those of us who look back to the old literary society as the supreme educational opportunity of our college days know how to estimate what these latest developments mean.

At present only a selected few are permitted to direct the extra-curricular activities of a school. Too often even they are otherwise sufficiently occupied and feel the new duties a burden. But yearly the connection between the freer outside activities and the more circumscribed doings of the classroom becomes closer and closer. Ultimately one will be but the extension of the other and all teachers will take part. The effect upon classroom work promises to be salutary. There is a world of difference between doing things and merely talking about doing them. Extra-curricular activities bid fair to enable us to judge more wisely what the effects of our handiwork really are.

I once had the pleasure of helping to plan and conduct a school festival in which about four thousand persons participated. The entire membership of three elementary schools, a high school, and a normal college was involved. Each group had its representatives on the executive committee and thus a hand in shaping the affair. All the preparations were made as part of regular class work. Departments collaborated as they had never thought of doing before. Art was, of course, everywhere — designing, supplying color schemes, selecting materials, harmonizing the ensemble. But science and mathematics found place also; music and English obviously. As for household arts, the schools on the grounds would fain supply refreshment for the visiting schools and food must be prepared and served. So each made his contribution. Here was a complex school community bringing all its resources to bear upon a common interest. The instance serves to illustrate, I think, the superb possibilities of cooperation and organized endeavor which are bound up in the project idea. Certainly the daily tasks of the pupils took on new meaning when brought thus into vital relation with a worthy

social enterprise. It is safe to guess, moreover, even though you can not prove, that more was learned during the period dominated by the festival than ordinarily.

BIBLIOGRAPHICAL NOTES

For the more radical attempts at reorganization see Wells, *A Project Curriculum;* Meriam, *Child Life and the Curriculum;* Dewey, *Schools of Tomorrow;* and Parkhurst, *The Dalton Plan.* Bonser's *Elementary School Curriculum* and Freeland's *Modern Elementary School Practice* mention many possibilities in this field; for the high school see Lull and Wilson, *Redirection of High School Instruction.* On the analysis of aims and abilities the following are helpful: Charters, *Methods of Teaching;* Betts, *Classroom Method and Management;* Parker, *Methods of Teaching in High Schools;* also many such specific treatments as Thorndike, *Psychology of Arithmetic;* Huey, *Psychology and Pedagogy of Reading;* and Freeman, *Teaching of Handwriting.* Books on the direction of study are familiar. For examples of projects of various kinds see the files of this JOURNAL and Sample Projects, Second Series; also a similar series issued by Rutgers College. Good bibliographies on extra-curricular activities by E. K. Fretwell have appeared in the *Teachers College Record* for January and March, 1923.

TEACHING LEVELS, TEACHING TECHNIQUE, AND THE PROJECT — II[1]

The Why of the Project Method

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The project as a method of teaching had its origin in the vocational subjects — manual training, home economics, agriculture. By 1908 the project was established as an essential part of the successful teaching of agriculture. Few teachers try to organize agriculture completely on a project basis. They plan to carry out one major project and one or two minor projects, being content to organize other phases of the subject on a problem basis. However, the projects properly handled motivate all of the work. A few unusually equipped teachers have succeeded in putting practically one hundred per cent of the agriculture work on a project basis.[2] But most are satisfied with a problem organization, reinforced and motivated by one or more good projects.

It may be well to pause a moment here to point out the essentials of a good project. They are:

First. — A basis in problem thinking terminating in definite planning for doing.

[1] Continued from the April number.
[2] See unpublished master's thesis of H. M. Hamlin, Iowa State College, 1922.

Second. — A real life undertaking on a scale as large as the maturity of the pupil and the facilities at hand will permit.

Third. — Planning and execution under supervision, thus securing an educative process.

Fourth. — Arrangements by which the pupil gets (or takes) the results of his work.

If the term project is limited as here suggested and the effort to make of it a universal panacea abandoned, the pedagogical situation will be not only simplified, but clarified.[1]

The project method was a natural development in the effort to secure practical application in the vocational subjects. The method was proving so effective that educators from the field of general education quite naturally took notice of it. Dr. Charters at the Kansas City meeting of the Department of Superintendence in 1917 was advocating the extension of the project method to home economics as a means of motivation and application. Such extension has now been made quite generally.

But confusion resulted when some one defined the project as a purposeful act, and teachers the country over began to vie with each other in an effort to place all school work on a project basis. The term used makes little difference ordinarily; but in this case the crossing of terms gave a hybrid that in many places proved a veritable Caliban in education. One member of the Boston Board of Superintendents reported the utmost confusion, in which the most frivolous and inconsequential undertakings were labeled as projects. A loose definition of terms usually leads to loose thinking and confusion.

Doubtless the original of the statement that "a project is a purposeful act" merely meant that purposeful activity is the outstanding characteristic of the project method. The article in the *Teachers College Record* of September, 1918, indicates as much. There is some evidence, however, of a period of doubt and confusion in the desire to capitalize on the term "project method." Charters, Horn, Parker, Stimson, Bagley, Yocum, Cox, Hawley, and many others [2] throughout the country have helped in righting the educational ship. We are now beginning to see that all projects involve purposeful activity, but that purposeful activity is broader than project in its application and is in fact our old friend, the doctrine of interest and motivation, applicable to all phases of school work and all techniques of teaching.

Of course some of those who sought to make the project method the one universal method have been somewhat annoyed at the unyielding attitude of those who held to the original meaning of the term "project," and one method of retaliation has been to misrepresent them. A distinguished protagonist of the "project universal" writes:

Many seem to identify the project with some constructional activity, disregarding entirely the question as to the attitude of the children in carrying on the work. Such interpreters would take the mental side of the experience for granted,

[1] Quoted from a discussion before the Society of College Teachers of Education, Chicago, 1922. Published in Educational Monographs of the Society, No. 11, 1922.

[2] See, for example, Charters, W. W., Limitations of the Project, *Jour. of N. E. A.*, January, 1922; Horn, Ernest, Criteria for Judging the Project Method, *Educ. Rev.*, **63**: 93–101, February, 1922; Stimson, R. W., Massachusetts Home Project Plan, Bul. No. 8, 1914, U. S. Bur. of Ed.; Cox, Florence C., Major Projects in Elementary Schools, Bul. No. 36, 1921, U. S. Bur. of Ed.; Hawley, Hattie L., Real Projects and Others, *Elem. School Jour.*, **21**: 778–81, June, 1921.

trusting to the concreteness of the activity to insure an educational result. From this standpoint a piece of shop work carried on by means of blue prints prepared in advance by the instructor would be regarded as just as truly a project as though the students themselves had worked out the design and made all the plans.

But we know that any advocate of the more restricted meaning of the term project would designate this situation not as a project but as an *exercise*. School activities include many doing activities besides projects — experiments, practica, exercises. In fact, few subjects can be organized completely on a project basis, and the attempt to do so has in many cases justified some such comment as the following from Davis: [1]

> The principal danger to which (so-called) project teaching is exposed is the noneducative value of much that is undertaken or the disproportionate emphasis likely to be given. Many class periods urgently needed for drill are spent in cooking or canning projects in which, to use Dewey's phrase, pupils, merely "messing around," accomplish little for themselves. Perhaps the jelly-making hour, designed in part to motivate third-grade language, requires the using of the language period to wash kettles. The project of beautifying the home town or city is commendable, but too much time devoted by children to picking up cans or refuse is barren of educational results. Home projects such as splitting kindling or making beds may have value in promoting ideals of perseverance in common with tasks faithfully performed, but, once thoroughly done, the activities themselves have slight educational significance.

The truth of this statement can not be denied. Confusion here comes from failure to recognize the drill technique as a separate technique, and the best technique to use when drill is needed. The drill should be motivated, but it should not be incidental. Likewise, projects have their place, but the place is limited. There is no one universal method, and the project method is quite limited.

Davis evidently does not understand that he is not criticizing the project proper, but rather the false view that would make the project a universal method. As a profession we are interested in defining our terms correctly, and preserving our well-established techniques. If we are too easily bowled over, we shall deserve the criticism which is sure to follow.

But, you may object that no one wants to abolish drill or to make one method universal. Well, one can only judge people by what they do and say. Listen to the following from an advocate of the "project method universal":

> It is commonly remarked that in order to secure thoroughness teachers must supplement projects by means of *formal* drills. This ought not to be necessary. Whenever actual tests have been made, classes using projects have generally shown a better grasp of facts and a higher degree of skill than formerly. When sufficient evidence has been accumulated on this point, the battle for the project idea will have been won so far as cheerful acceptance of it is concerned.[2]

I suggest that the aforesaid advocate consult the report of the Gary Survey Committee. The drill subjects do not lend themselves to socialized project treatment. Drill subjects call for the drill technique, the first item of which, as shown above, is thorough motivation. Dr. Samuel Chester Parker has the correct perspective of the place of drill in the school program. He says:[3]

[1] *Technique of Teaching*, p. 12.
[2] Hosic, address, Boston, December 3, 1921.
[3] *Elementary School Journal*, February, 1922.

> As we have defined project teaching, it is only one type of procedure needed in pupil training, not the sole type. There is much valuable activity and learning in social life (including the school) that does not consist of planning practical activities. . . . Hence we have a large place in the school for the learning of organized facts from textbooks and for drill in acquiring routine skills. It is quite significant that while enthusiasm for project teaching is sweeping the country, at the same time the scientific investigators of methods of teaching reading, spelling, handwriting, and arithmetic are placing special emphasis upon the scientific diagnosis of each pupil's needs in each skill and the prescription by the teacher of specific practice exercises suited to each pupil's peculiar needs and deficiences. . . . Skill in planning practical activities thus becomes one among many coördinate objectives of the school; and practice in such planning becomes one among several forms of learning.

The reaction to the attempt to take a fragment of method and give it universal application, scrapping at the same time the techniques built up through several generations, was a perfectly natural reaction and indicates a good measure of vitality in the profession. We do not want a universal method, for such a method has always been unsatisfactory. There are periods in the history of education when drill technique was quite dominant. It was applied to all subjects, problem and appreciation, as well as to drill subjects. The Gradgrind school of Dickens' *Hard Times* is a keen caricature of this type of pedagogy. Others at times have advocated appreciation methods for all school work, — exposure and saturation but no drill and no organization. Such a method applied universally is weak and ineffectual, although most effectual for appreciation material.

So the present attempt to make the project method universal must fail. It is weak and ineffectual when applied to drill. It makes drill incidental, and that is not the way to drill. The drill technique is best for drill material, although it does provide as its first step for motivation or purposefulness. So in the field of appreciation, if we want to build up permanent appreciations we must use the right method. The drill method has not done it in the past, nor will the project method do it in the future.

ADVANTAGES OF THE TERM "MOTIVATION"

But the term "motivation" has some advantages over the expression "purposeful activity" even though we agree that they are to be understood as synonymous. Motivation has come to imply a full teacher participation, even an active teacher participation; while purposeful activity has unfortunately come to signify a situation in which the children do what they most want to do regardless of its educational value. Motivation throughout its history has insisted, *first*, that school work should be directed in accordance with the aims of education, and that the teacher should be active in choosing the subject matter appropriate to the accomplishment of these aims; *second*, that there is no difficulty in securing the motivation of worth-while work so fully that the child willingly chooses the work, becomes interested in it, and finds adequate motives for successfully completing it, thus making the work meaningful and purposeful. A definite technique of motivation has been developed. The teacher is not powerless nor subject to the whims of pupils.

The law of motivation may be stated as follows: "To motivate work it is only necessary to give it vital connection with a child's present interests or his instinctive tendencies." With this law as a starting point, the teacher asks with reference to a proposed school undertaking, whether it be the mastery of the addition combinations or of corn raising:

1. Is it useful?
2. How can it be connected with the child's present interests?
3. What instinctive appeals can be made?
4. Having developed a feeling of need, how can I arrange the details of the procedure so as to keep the feeling strong and active?
5. Is the pupil's attitude right; is this his own free choice?

Thus is the teacher retained as the guiding force in the schoolroom, although motivation has taught her that the first essential step in every undertaking is interest and motive strong enough to lead to choice and desire. She can even go so far in her reliance upon motivation as to say, when children do not respond, "Something is wrong. Either this work must be beyond the comprehension of the children or I have failed to properly motivate it. Possibly its use is not apparent. I will omit it for the present and try again some other time." This procedure fully protects pupils' interests, motives, desires, purposes, without over-emphasizing them and without minimizing the function of the teacher in accomplishing through the schools the larger aims of education.

Concluding this section of my discussion, I venture to indicate four unfortunate circumstances in the launching of the "project method universal":

1. Substituting a part for the whole, the project method for a well-recognized battery of techniques.
2. Spoiling a perfectly good term, useful and well understood in its proper place.
3. Attempting to make drill incidental.
4. Stressing pupil purposes to such an extent that to many followers there seemed no place left for teacher purposes and adult leadership.

DEVELOPMENT OF TERMS

Educational terms tend, on the one hand, to acquire fixed and definite meaning, and, on the other hand, to acquire new meaning as they are enriched through schoolroom experiences. It would be unbecoming to assume that the advocates of purposeful activity in 1918 did not have in mind some shades of meaning in method and curriculum that were over and beyond the meaning and connotations attached to the term motivation by its proponents in 1916. It is even probable that Dewey several years earlier had in mind quite as fully all the meaning that has since been put into the terms motivation and purposeful activity, since both terms rest so squarely on the doctrine of interest as developed by Dewey. It is even more probable that the terms motivation and purposeful activity, as they are now being used, carry a richness of meaning which neither possessed in 1916 or 1918. Either term adapts itself fully to the newer philosophy of education and the newer psychology of learning as worked out by Dewey and Thorndike. A thoroughly motivated activity leads naturally to other activity. One appealing problem develops other problems. Drill that is motivated tends to spread to other needed drill through development of interest, mastery of technique, and fuller realization of the

usefulness of the material. One of the marks of a good question is that it stimulates questions by pupils and leads naturally to other significant questions. Questions should always be so closely related that interest flows over from one to the other. So the idea of growth in education, or the general unfolding of desires and activities leading to other desires and activities, is an integral and essential part of motivation at its best.

Motivation is in complete harmony with the newer psychology, which considers not alone the immediate results but the complete cycle of relationships. The child's attitude is a fundamental consideration in motivation. The child must be heart and soul in the work with interests and motives that reach out into real life purposes. So in any truly motivated situation, the bonds accessory and concomitant are as important as the primary bonds. Motivated school work means the freeing of the children from textbook routine and meaningless tasks, and the substitution therefor of situations in which the children are socially coöperative in the accomplishment of aims worth while in themselves, and which satisfy present felt needs, motives, desires, purposes.

It is quite possible that the term purposeful activity carries, to some, shades of meaning not suggested by the term motivated activity. It must be evident to all that the terms mean approximately the same thing. It should also be evident to all who have followed the development of the term project that only through the loosest sort of thinking will one attempt to use the term project as synonymous with either motivation or purposeful activity.

PROJECTS AND OTHER THINGS

Before closing my discussion I want to show by illustration in some of the school subjects just what a project is and some of its limitations. As I understand it, a project is an actual undertaking somewhat on the basis of a life pattern. Motivated or purposeful activity is much broader than project. The relation may be shown diagramatically:

Motivated situations:
1. Motivated drill.
2. Motivated appreciation.
3. Motivated problems.
4. Motivated projects.
    a. Subject projects.
    b. General projects.

The project involves doing, but not all doing in school work results in a project. There are practica, experiments, exercises. The project involves pupil planning, but not all pupil planning results in a project. It may be a game, a drill exercise, an exhibit, or something else. A project involves purposeful or motivated activity, but not all such activity results in a project. In fact all school work should be purposeful or motivated, but only a small part of school work can be organized into projects. This will be evident from the subject discussions which follow:

Subject Discussions

1. Agriculture.
    a. Project. — Raising an acre of potatoes under the well-known project rules.
    b. Exercise. — Examining clover seed to determine the amount of weed seed. This exercise is a good one and may be motivated by securing samples of the clover seed which the farmers intend to sow, by giving results in terms of number of each weed per square

rod, by publishing results in the local papers, etc., but it still remains an exercise or practicum, not a project.

c. Exercise. — Learning to judge potatoes.

d. Problem. — Determining the variety of potatoes best suited to Connecticut Valley conditions, considering yield, wilt resistance, time of harvesting, marketability, etc.

e. A falsely named, bad, or artificial project for farm boys in the Connecticut Valley might be developed out of cotton raising and labeled "Our Cotton Project." But the foolishness of such procedure in agriculture is too apparent to require discussion. Cotton raising might be motivated for sixth-grade geography; it could not be motivated as agriculture under the conditions. With neither group of pupils could it be a real, fifty per cent real, or five per cent real project.

2. Domestic Art.

a. Project. — Making a school dress, appropriate in colors, pattern, and design to the pupil, and with a definitely limited cost, — under the well-known rules for a project.

b. Exercise. — Making button-holes. With a sample of an approved standard at hand, the girls easily decide to stop and drill until they can approximate the standard.

c. Problem. — How may I judge materials so as to secure value and wearing qualities for my money?

d. A means of studying the above problem which would carry with it considerable interest and motivating force would be the collection of samples of raw wool, wool in various stages of manufacture, and a good sampling of wool fabrics. Some would call the collecting of these samples a "wool project." But it is merely a method of problem study, akin to the excursion, and carries strong motivating value when properly handled.

3. United States History.

a. Project. — Projects are few. It is not a doing subject. It is a problem-solving subject. There are two great purposes in history: one is to build up pride in our country and a basis for patriotism, the other is to teach children how to solve present-day problems in preparation for right public opinion or voting. The first aim requires appreciation technique, the second, problem technique. A constitutional convention as described in the chapter on history in *The Motivation of School Work* (Houghton Mifflin Co.) is not likely a project. It is a play-like affair, very successful, and highly motivated. It furnishes the spirit of play, personal feeling, and a good motivated method, in the study of the problem, "How came we to have our Constitution in just this form, and what does it mean anyway?"

A pageant of the city of Boston put on by school pupils of Boston in celebration of her 300th anniversary could be made a real history project, involving:

(1) A basis in problem thinking terminating in definite planning for doing.

(2) A real life undertaking.

(3) Planning and execution under supervision.

(4) Pupils getting the results in enjoyment, in praise and approval.

b. Problems. — Problems are the real stuff of history and I am willing to assert that any worth-while history can be organized fully on the problem or appreciation basis. This will be taken for granted in this group, I am sure.

4. Civics.

a. Project. — Civics is a here-and-now citizenship forming subject. If we assume that school is life, then we can have many project situations. The election of school officers on the plan of a regular election can be made a worth-while project, meeting all of the requirements of a good project.

Much of the work in civics, however, will be on a problem basis, without any attempt at projects.

5. Geography.

a. Project. — Miss Hawley, of Worcester, in the *Elementary School Journal*, June, 1921, has properly characterized a "rubber project" in fifth-grade geography. A sand table is used, and the whole is labeled

"Rubber Industry in the Amazon Forests." Of course it is not a project. It merely uses the play instinct as a basis of motivation in problem type of material.

Geography is not a doing subject. It is a thinking, problem-solving subject. It can make use of excursions, collections, exhibits, correspondence, imaginary trips, etc., *i. e.*, it can be thoroughly motivated. And it can be thoroughly problematized. Drill can be made incidental, or preferably omitted, for it is not a drill subject. The mere facts as such mean nothing. They become significant only in the solution of worth-while problems.

6. Numbers, or Elementary Arithmetic.

a. Project. — There are none. As the child develops he may undertake to budget the family income, keep his own accounts, manage a savings account, or keep accounts in the management of a newspaper route. But it is doubtful if these are more than simple applications of the drill material.

In the upper grades we may recognize a project opportunity in the actual organization and management of a school savings bank as at Montclair, New Jersey, or the management of the print shop and book store in the Sioux City High School.

b. Motivated Drill. — Certainly this is the superior drill subject, and all drill can be motivated, chiefly by competition, games, and attempts to reach standards. But the substantial work back of all this is the systematic drill, through the skillful use of drill technique. Motivation is only the first step in drill technique.

"But when third-grade pupils play store, is that not a project?" Miss Hawley in the *Elementary School Journal*, June, 1921, has answered that question correctly. It is merely a good illustration of *motivated drill* based upon the play instinct, and it should be so labelled. Conducting a real store would be a project, but before that is undertaken the projector should know his arithmetic. The object in playing store is not the store, but a feeling of need of number facts.

Right here is a good simple test of a project. A project is carried on for its own sake, it is real, it is a life undertaking worth while in itself, but a motivated situation is a means rather than an end in itself, although it is better the closer to life it comes in its appeals to usefulness, present interests, and instincts.

7. Literature.

This is an appreciation subject. It can be motivated. It is not a doing or project subject, although a class might, once a year, attempt to write a school song, or a class poem, or a sonnet.

8. Composition.

The getting out of a school paper is a real project. Frequently it can be closely connected with the work in English. It should be always, as Stout has pointed out.

But the composition work, while it can be easily and fully motivated, does not lend itself readily to project treatment.

Do I need to carry my illustrations further? Are there distinctions to be made and is our thinking clarified by making them, or is there only one method — the project method — and only one type of acceptable school work — the project? Shall we abolish drill, appreciation, and problem techniques? Is the teaching technique as developed in our normal schools during two generations to be now cast aside as worthless?

"But," you object, "we never thought of doing that." It is to your credit if you did not think of it. I hope not a single one of you did. Still, you must have thought *about* it, if you have been following the preachments of the advocates of the "project method universal." I have given one quotation supporting the idea of incidental drill. Now I want to call your attention to the November, 1922, number of this JOURNAL, page 117. There I find this statement:

The teacher who seeks to master and apply such a bewildering array of notions as instinctive basis, individual differences, apperception, interest, self-activity, motivation, problem attack, psychological versus logical, inductive versus deductive, socialization, transfer, the school as a training in citizenship, leadership, moral development, and building of ideals has a formidable task ahead of him. A balanced technique can hardly result from the consideration of them separately. Loss of perspective and faddism are all but inevitable. With such definite plans of procedure as socialized recitation and supervised study the danger is greater still.

Now, what will you say? Isn't that a definite proposal to abandon other techniques? It reads like a patent medicine advertisement — "Wine of Cardui, guaranteed to cure all ailments from asthma to rupture" — the surest sign of "loss of perspective and faddism."

Eleven details of technique are mentioned in the quotation. Three of them are nearly identical, but we will consider that there are eleven — eleven details of technique. Of course, details are a nuisance. But you who are teachers each have more than eleven pupils, each a problem more difficult than any one of the aforesaid details. And you who are superintendents, most of you have more than eleven teachers to understand, develop, coöperate with. If your supervision is effective it must deal with individuals and with details. Success in any line requires attention to details and essential technique. There is no other royal road. The teaching profession has developed skillful techniques and has mastered them. It will continue to do so and in the future will include the technique of the project, properly subordinated. This you understand and I need not extend the argument. If I were rewriting the above quotation, I should leave the first sentence as it is except to extend the list to include definite recognition of the techniques of drill, appreciation, and the project. The problem attack is mentioned. The next three sentences of the quotation I would change to read as follows:

A balanced technique can only result from the consideration of them separately and together. Without a mastery of the well recognized techniques of the profession, loss of perspective and faddism are all but inevitable. The building up of definite techniques in such difficult procedures as socialized recitation and supervised study shows the strength and development which the teaching profession has attained.

Then I should add:

We may expect that the teaching profession will properly evaluate the project, become familiar with its technique, and give it the fractional place in the total teaching process which it is capable of filling. On the other hand, purposeful activity, which a few advocates have been proclaiming as a quality of project teaching but of no other teaching, will be recognized as our old friend, the doctrine of interest, self-activity, and motivation, a basic requirement in all good teaching.

[THE JOURNAL OF EDUCATIONAL METHOD seeks only the truth and is glad to publish this article taking issue with some of the positions held or assumed to be held by its editor and others of its founders. If the article should lead to a rereading of the series on method prepared by Professor Kilpatrick last year, as well as that appearing in current issues, it will perform a useful service. — EDITOR.]

THE CLEARING HOUSE

A BOOST-YOUR-TOWN PROJECT FOR ENGLISH CLASSES

It sold at twenty cents a copy, though they might have asked fifty. Everyone wanted a copy, but the Sixth-A did not know that when they estimated that they could sell two hundred and fifty copies. Who can resist the temptation to see his own name and business in print?

The Sixth-A needed money. They had bought a phonograph and a set of reference books which had to be paid for. The proposal to give an entertainment was turned down as having already been overworked, and then some one had an inspiration, namely, a school paper. As such it started, but an examination of its contents would convince any skeptic that it has little of the musty savor of the ordinary school paper.

The first page of their publication stands as follows:

A Budget for Canandaiguans

compiled by

The Citizenship Club, Grade Six A

Teacher.....Miss Edith Helfer

Business and Editorial Staff

Editor-in-Chief
Business Manager
Sport Committee
Correction Committee
Joke Committee
Cover Design Committee
Circulation Committee

The staff was elected by popular vote, and it is to the credit of the teacher that not a single "head" fell down on the job.

The business manager and his helpers made a trip to the school stock room where they took prices on paper, brass fasteners, and raw materials for making the mimeograph copies. They were offered the aid of the office girl in cutting the stencils. Prices were given, with a liberal discount, the computation of which, together with the estimates of the amount of material needed and costs, formed the basis of the arithmetic assignment.

The cover committee interviewed the three photographers in town to ascertain where they could have a group picture of the class taken for the least money. A film was donated, from which three boys printed and developed 250 pictures, or one for each cover. They were boys who like to play ball, too. All the available electric light sockets not in classrooms were utilized one day as members of the class trudged in armed with electric irons for pressing the pictures in place with the dry mounting tissue. Probably this picture showing the eager interested faces of one hundred per cent of that class was the personal tie that bound every member to the project with bands of steel — at any rate there were no slackers in the line.

It was decided by the editor-in-chief and his staff that if the class were to publish a paper which would sell, personal interests of Canandaiguans must be appealed to.

A list of all the industries, societies, and points of interest of the city was compiled. Appointments were made by the children to interview those at the head of the institutions, and following the interview the committee, usually three in number, wrote up an article on the "Lisk Manufacturing Company," the "Rotarians," or the "Sauerkraut Factory" as the case might be, and the effort was submitted to the editorial staff for approval. After being corrected and rewritten, it was submitted to the person interviewed, who gave suggestions,

criticisms, and approval. The article was then marked "Approved" by the committee and sent to the office, where the girl made the stencil.

Fifty-eight such articles, varying from fifty to three hundred words in length, were written and grouped under one of three headings: 1. Canandaigua geographically; 2. Canandaigua industrially; 3. Canandaigua socially.

In the drawing class suitable tail-pieces were made to fill out pages, and one boy, clever with his pen, embellished the sport page with grotesque figures playing ball, and did a cartoon which was not very original but which drove home a truth to all the members of the class.

Other departments contain editorials, jokes, room news, and the advantages of Canandaigua as a place in which to live.

Not a feature of this work except the stencil cutting was done outside of the class. One rebuff only was received by children from adults whom they interviewed. The townspeople caught the spirit and became "as little children."

The profit on each paper, after all expenses were paid, amounted to 12½ cents.

We have experimented with a number of projects, but I consider this the most complete, adaptable one I have yet seen. The class is planning already to get out a budget next year, which may be "The Needs of Canandaigua."

FRANCES M. WILBER,
Union School, Canandaigua, N. Y.

AS REPORTED

SUPERVISORS OF KANSAS

The Kansas State Teachers' Association includes a Supervisors' Section, which had an interesting program at the annual session in January. The speakers and topics were as follows: "Democracy in Supervision," Superintendent A. J. Stout, Topeka; "Developing Professional Spirit Through Supervision," Dean F. J. Kelly, Lawrence; "Current Tendencies in Supervision," Miss Irene Denneen, Wichita; "How Should Supervision be Differentiated from Administration," Superintendent J. H. Clement, Junction City; "Worth-while Teachers' Meetings," Miss Sadie Glucklich, Salina; also an address by Superintendent Frank Cody of Detroit, Michigan. The Chairman of the Section was Miss Julia Davis of Topeka. The Chairman elected for the ensuing year is Miss Irene E. Denneen.

THE SUMMER MEETING AT OAKLAND

A special meeting of the National Conference on Educational Method will be held in Oakland, California, on Tuesday, July 3rd, in connection with the annual meeting of the National Education Association. It is not possible to give at this time the details of the program, but we can say that the theme of the meeting will be, "The Chief Lines of Progress in Educational Method." It is hoped that all who are to be in the vicinity and who are interested in supervision and teaching will plan to be present.

WISCONSIN ENGLISH NOTES

Following the example of New England, Illinois, New York, and other sections, the English teachers of Wisconsin have begun the publication of a small monthly house organ called *English Notes*. This is edited

by Professor Sterling A. Leonard, of the University of Wisconsin, and managed by Miss Regina E. Groves, of the Madison Vocational School in Madison. The numbers which have appeared are readable and contain matter of genuine use to teachers of English. The JOURNAL OF EDUCATIONAL METHOD bids the new publication Godspeed.

ADA VAN STONE HARRIS

All her friends — of whom there were very, very many — have been greatly shocked to hear of the death of Ada Van Stone Harris, for many years Supervisor of Primary Education in Pittsburgh, Pennsylvania. She did notable work not only in her own city but also on various commissions and as a member of several educational societies. She also made important contributions to the educational magazines and was author or co-author of valuable books for schools. Hers was a magnetic personality, and all who came in contact with her remarked her friendliness and tact. One of the leaders in her field, she will be greatly missed.

THE DENVER SUPERVISION COUNCIL

The following report of the organization and activities of the Denver Supervision Council is so valuable that we are printing it in full. What Denver is doing others might well do also.

The purpose of the Denver Supervision Council is to effect an understanding with respect to supervision of instruction among all the elements that make up the educational staff of the Denver Public Schools. It is based upon the theory that in a system of schools whose administrative and teaching corps both are seeking to do the best thing for the pupils a free discussion of the problems which affect instruction will generally clear away all causes of friction. The progress of supervision has been much impeded in the past because certain powers have felt that it was dangerous for the classroom teacher to have the privilege of free speech in dealing with the question of supervision as the teacher sees it. Those who have held this view have failed to realize that there is far more danger in repression and that there is practically no danger when intelligent and fair-minded people sit down to a common table and freely expose their views to the reactions of one another. To deny the validity of this proposition would be to assume either a lack of intelligence or a lack of fairness or both of these evils on the part of teacher or supervisor, an assumption which few would proclaim in this day and age.

The Denver Supervision Council is, therefore, primarily a discussion group. It has no definite authority consigned to it. It does not even make formal recommendations. It seeks to be an influence through effecting a common viewpoint for all concerned.

In selecting the membership of this Council the idea of representing all elements of the educational staff was kept foremost by the superintendent in making the appointments. Naturally, all directors and supervisors primarily charged with the responsibility of instruction were made *ex officio* members. The *ex officio* membership also included the President of the Principals and Directors Association, the President and Vice-President of the Classroom Teachers' Association. Three principals suggested by the President of the Principals and Directors' Association were selected to represent, severally, the senior high school principals, the junior high school principals, and the elementary school principals. Several classroom teachers selected in coöperation with the President of the Classroom Teachers' Association were included to give direct representation to the teachers.

The principle of rotation of membership was accepted as far as it could be made practicable. This applies to the teachers and principals who are not *ex officio* members. By a process of rotation among these members it is hoped that in the course of time there will be teachers and principals distributed all over the city who will have sat in the discussions of this Council and profited thereby. In the course of a reasonable time it is hoped that every school will have in its corps one or more members who have had this experience. In this way, eventually, the discussions of the Council should pervade the entire school system.

It is also understood that at any time teachers or principals from any part of the city may get their views before the Council by having them presented by one of its members.

The Council meets bi-weekly, and the discussion lasts one or two hours. Only those matters which appertain to supervision are allowed presentation.

Among the things which have thus far been discussed are teacher rating, individual conferences of supervisors with teachers, different plans of organization for supervision, teacher preparation of lessons, demonstration lessons, professional reading, standard tests and measurements, and many other like problems. The Superintendent meets occasionally with the group and contributes his viewpoint. The Council membership seems to be vitally interested in the discussions, and, while there is no way of definitely measuring the result of such an organization, all parties concerned feel that it is a positive influence for good.

SASKATCHEWAN APPRECIATES THE JOURNAL

In its original inception the JOURNAL OF EDUCATIONAL METHOD was thought of as a suitable basis for the discussion of educational problems both by teachers in service and by teachers in training. It is therefore especially gratifying to us that practically all the members of the student body of the Provincial Normal School at Regina, Saskatchewan, Canada, have become subscribers to the JOURNAL. Who will be the next to report a similar record?

THE READER'S GUIDE

TWO HELPFUL GUIDES TO THE NEW EDUCATION

Messrs. Miller and Leonard, as it happens, are co-workers in the University of Wisconsin and in the Wisconsin High School. The latter has long been known as an experiment station and seat of new and productive educational ideas. The two books before us,[1] one in general and the other more specifically, reflect the spirit which animates the place.

Directing Study, unlike a good many recent publications in the field of education, does not smell of the study. It bears throughout the marks distinctive of first-hand experience. In reality it is a body of principles concretely set forth in terms of accounts of actual teaching and the interpretation of them.

The author's main emphasis is upon the manifold proper uses of the so-called recitation period. This he would transform into a *thinking* period. The pupils should be permitted and assisted to take their share of the responsibility. Results are to be obtained by means of a suitable interaction of pupils and teacher.

This book will do much to save the movement for supervised study from falling into a formalism which would speedily lead to its complete abandonment. It will at the same time prove a powerful stimulus to a fresh attack on the whole problem of the modernizing of school work. Prussianism has had its day; democracy in education is near at hand.

Professor Leonard is concerned with reading, primarily with the reading of literature

[1] *Directing Study.* By Harry L. Miller. Chas. Scribner's Sons. *Essential Principles of Teaching Reading and Literature.* By Sterling A. Leonard. J. B. Lippincott Co.

in the intermediate grades and the high school. He has attained a fundamental view of the nature and processes of literary study and brings this to bear constructively upon this single field.

Prominent among the procedures which he urges are these: beginning where the children actually are; selecting literature not only for its excellence but for its power to appeal to children; distinguishing clearly between reading in the ordinary sense of comprehension and reading for the realization of the experiences embodied in literature.

What this means in actual practice the writer has shown at length, not only in his discussion but also in the copious lists of readings which he includes. The seeker will find here abundant help in choosing books both for class use and for general reading. The classified bibliography at the end will guide the student in his attempt to canvass the wealth of references which this subject has called into being in recent years.

Both these books will amply repay careful reading. Without doubt they will take their place in the rapidly lengthening list of books which various classes in education find indispensable to their work.

SIGNIFICANT ARTICLES

TYPES AND PRINCIPLES OF CURRICULUM-MAKING

One of the two or three principal topics of interest discussed at the meeting of the Department of Superintendence at Cleveland was that of curriculum-making. This was the chief subject at one of the evening sessions of the National Society for the Study of Education and it was also discussed before the Department. One of the principal papers read on the latter occasion was by Dr. Otis W. Caldwell, Director of the Lincoln School of Teachers College, New York. This paper appears in *School and Society* for March 24, under the title, "Types and Principles of Curricular Development." Two types of such development were outlined and certain guiding principles stated. The first type was illustrated at length by means of an account of the Chicago investigation of the extent and nature of use of biological material in the public press against courses in biology as found in the schools. A second illustration was found in the field of mathematics. Starting with an inventory of the points reported by the National Committee on Mathematical Requirements as fundamental in mathematics, tests were given to a large number of children and the results showed that there is little in the field of mathematics which pupils can do with anything like approaching 100 per cent. The important principles which should be borne in mind in building up a curriculum were said to be these: the pupil attitude toward school subjects; the necessity of pupils' success; improvement of learning by an increase in the number of senses used; provision for pupils teaching each other; regarding the organization of the school as a legitimate and necessary part of the subjects of instruction. The concrete and constructive nature of this paper makes it one of the most important recent contributions to the subject.

PRACTICE TESTS IN BEGINNING READING

For some years an experiment has been in progress in Detroit looking to the development of practice tests in reading. The effectiveness of the material so far devised has recently been tested. A report of the results is given by Miss Nila B. Smith, assistant supervisor of primary grades in Detroit, in the *Journal of Educational Research* for March. The nature of the tests consists principally of pictures to be cut out, pictures to be colored, and so forth, the directions for which the child must read in order to accomplish the tasks set. The results

obtained were measured by the use of the following standard reading tests: Gray's Oral Reading Test, Haggerty's Tests I and II, Detroit Group Vocabulary Test, and Detroit Story-Picture Test. The results were strikingly favorable to the new material, so much so that first-grade children of average intelligence may apparently be expected to read as well at the end of one semester through the use of it as they have ordinarily done at the end of one year. The author says modestly that of course further experiment should be entered into before the conclusions should be regarded as established.

BEGINNINGS OF SILENT READING

A second article on reading of general interest will be found in the *Journal of Education* for March 8. This is a summary by Professor Ernest Horn, of the University of Iowa, of the main points he has recently been pressing in his addresses on this subject. He declares that silent reading should be regarded not as a method or a group of devices merely but as a far-reaching scheme of teaching. The abilities involved may be classified under the heads of comprehension, speed, organization, and remembrance. Definite material for training in each of these important aspects of reading must be provided for the early grades. This will consist in part of flash cards and vocabulary exercises.

EUROPE AND THE WORLD CONFERENCE

In view of the approaching World Conference on Education to be held at San Francisco June 28th to July 5th, more than ordinary interest will attach to an account of his recent visit to several of the European countries by Mr. Charles H. Williams, of the University of Missouri. As a representative of the Committee on Foreign Relations of the National Education Association, Mr. Williams left this country in August, 1922, and spent some weeks in calling upon leading educators in England, Belgium, Germany, Czechoslovakia, and France. He found everywhere a most sympathetic interest in the proposed International Conference and a readiness to arrange for representation if possible. The English educators declared that they would give the conference in America preference over two other international conferences planned to be held in Europe. The most striking facts with regard to conditions pertain to Germany and Czechoslovakia. Teachers in the former find it almost impossible to live on their salaries; in the latter country conditions are much better.

THE NEW BOOKS

Directing Study. Educating for Mastery Through Creative Thinking. By Harry L. Miller. New York: Chas. Scribner's Sons, 1922. Pp. x+377. $1.80.

A discussion aiming to shift the emphasis from recitation to thinking in the class period.

Every Teacher's Problems. By William E. Stark. New York: American Book Co., 1922. Pp. 368.

Provision for inductive study through concrete examples.

A First Book in English for High Schools. By A. L. Murray and Ernest P. Wiles. New York: D. C. Heath & Co., 1922. Pp. x+478.

Belongs with the newer type of texts in English.

The Young Citizen. By Charles F. Dole. Revised and enlarged. New York: D. C. Heath & Co., 1922. Pp. x+213. Illus.

A classic in its field.

Community English. A Book of Undertakings for Boys and Girls. By Mildred B. Flagg. New York: Macmillan Co., 1922. Pp. xvi+266. Illus.

A book of "projects." Formal instruction in language is conspicuously absent.

Stevenson's Treasure Island. Edited by Max J. Herzberg. Riverside Literature Series. Boston: Houghton Mifflin Co., 1922. Pp. 297.

Nature Near Home and Other Papers. By John Burroughs. Riverside Literature Series. Boston: Houghton Mifflin Co. Pp. 93.

Queed. By Henry Sydnor Harrison. Riverside Literature Series. Houghton Mifflin Co. Pp. 430. Limp covers.

The Fortunate Days. By Ethel May Gate. New York: Silver, Burdett & Co., 1922. Pp. 128. Illus.

Old stories of the East retold.

The Broom Fairies and Other Stories. By Ethel May Gate. New York: Silver, Burdett & Co., 1922. Pp. 110. Illus.

North America. In New Geographical Reader Series. By Frank G. Carpenter. New York: American Book Co., 1922. Pp. 510. Illus. Maps.

Problems for research and plans for journeys have been added in this edition.

Everyday Citizenship. By Frederick F. Blachly and Miriam E. Oatman. New York: Chas. E. Merrill Co., 1922. Pp. 252. Illus.

Brief chapters with questions for discussion.

Better Speech. By Annie E. Polk. New York: Century Co., 1922. Pp. xxvi+251. $1.00.

A course in grammar prefaced with phonetics and dictionary study.

Health—Public and Personal. By Ralph E. Blount. Boston: Allyn & Bacon, 1922. Pp. x+316. Illus. $1.20.

Both practical and interesting.

The Art of Debate. By Warren C. Shaw. Boston: Allyn & Bacon, 1922. Pp. x+461. $1.40.

Primarily for college use.

Loti's Pecheur d'Islande. Edited with introduction, notes, exercises, and vocabulary, by Winfield S. Barney. Boston: Allyn & Bacon, 1922. Pp. xi+138+42. Illus. $.80.

Selections from Ovid. Chosen to meet the new requirements of the College Entrance Examination Board. By Francis W. Kelsey and Jared W. Scudder. Boston: Allyn & Bacon, 1922. Pp. vi+130+66. Illus. $1.00.

A Real Country Teacher. By Jessie Field. Chicago: A. Flanagan Co., 1922. Pp. 119. Illus.

Told in letters.

Language in the Making. A Word Study. By Wilhelmina M. Thoma. New York: Harcourt, Brace & Co., 1922. Pp. xvi+207.

For high schools.

Beginners' Ancient History. From Earliest Times. By J. B. Newman. Yonkers, N. Y.: World Book Co., 1922. Pp. 174. Illus. $.96.

Beginners' Modern History. From about A. D. 1000. By J. B. Newman. Yonkers, N. Y.: World Book Co., 1922. Pp. 160. $.96.

Brief History of Modern Europe. From 1814 to the Great War. By William Glover. Yonkers, N. Y.: World Book Co., 1922. Pp. 232. $1.20.

Supervised Study Speller. By W. F. Tidyman. Yonkers, N. Y.: World Book Co., 1923. Pp. xii+116.

The result in part of original investigation by the author.

Hawthorne: The House of the Seven Gables. Edited by A. Marion Merrill. Academy Classics Series. Boston: Allyn & Bacon, 1922. Pp. 378. $.80.

How the Present Came from the Past. By Margaret E. Wells. Book I. The Seeds in Primitive Life. Pp. xvi+176. Illus. Book II. The Roots in Oriental Life. Pp. xvi+274. Illus. New York: Macmillan Co., 1922.

La Poudre aux Yeux (Labiche et Martin). Edited by Victor E. Francois. Revised and enlarged. New York: American Book Co., 1923. Pp. 154. Illus.

The Old Post and Other Nature Stories. By Carl Ewald. Translated from the Danish by G. C. Moore Smith. New York: E. P. Dutton Co., 1922. Pp. 125. $.70.

Français Practique. By W. M. Briscoe and Adolphe Dickman. Boston: Allyn & Bacon, 1923. Pp. 296. $1.40.

Based upon the daily life of the student.

Manuel: El Conde Lucanor. Edited by Medora L. Ray and Ruth A. Bahret. Boston: Allyn & Bacon, 1922. Pp. 195. $.80.

Types of the Essay. Selected and edited by Benjamin A. Heydrick. New York: Chas. Scribner's Sons, 1921. Pp. xv+373.

Similar in plan to the writer's *Types of the Short Story.* A considerable range of writings is included.

School Program in Physical Education. By Clark W. Hetherington. Yonkers, N. Y.: World Book Co., 1922. Pp. xii+132. $1.00.

IN PAPER COVERS

Bound or Free and *The Wizard of Words.* By Catherine T. Bryce. Boston: Atlantic Monthly Press, 1922.

Bucyrus City Schools, Survey Bulletin, Vol. IV, Nos. 1 and 2. Bucyrus, Ohio, 1922.

The Measurement of Achievement in Shorthand. By Elmer Rhodes Hoke. Johns Hopkins University Studies in Education. No. 6. Edited by Edward F. Buchner. Baltimore, Md., Johns Hopkins Press, 1922. $1.50.

Self Measurements. Moraine Park School, Dayton, Ohio, 1920–1921.

Facts on State Educational Needs. Research Bulletin of the N. E. A., Vol. I, No. 1, January, 1923. Washington, D. C.

The Seventy-third Annual Report of the Public Schools of Worcester, Massachusetts, 1921. Worcester, Mass.: Commonwealth Press, 1922.

Biology in the Public Press. By Charles W. Finley and Otis W. Caldwell. New York: Lincoln School of Teachers College, 1923.

Standard Educational Tests in the Elementary Training Schools of Missouri. By Walter F. Dearborn, Edward A. Lincoln, and Edwin A. Shaw. Cambridge, Mass.: Harvard Monographs in Education, Series 1, No. 3, June, 1922.

A Comparison of the Intelligence and Training of School Children in a Massachusetts Town. By Edwin A. Shaw and Edward A. Lincoln. Cambridge, Mass.: Harvard Monographs in Education, Series 1, No. 1, May, 1922.

Public Education in Indiana. A Report of the Indiana Educational Commission. New York: General Education Board, 61 Broadway, 1923.

The Schorling-Clark Practice Exercises for Accuracy and Speed in the Fundamentals of Arithmetic. (Preliminary edition.) Yonkers, N. Y.: Gazette Press, 1923.

Improvement of the New Bedford Public Schools. By Frank E. Spaulding. New Bedford, Mass., February, 1922.

Psychology Applied. By W. V. Bingham. Reprinted from the *Scientific Monthly,* Vol. XVI, No. 2, February, 1923.

Publications in Applied Psychology by Members of the Staff of Carnegie Institute of Technology, 1916–1922. By W. V. Bingham. Pittsburgh, Pa., 1923.

Child Labor in the United States. Ten Questions Answered. U. S. Department of Labor, Children's Bureau. Washington: Government Printing Office, 1923.

The Nutrition and Care of Children in a Mountain County of Kentucky. By Lydia Roberts. U. S. Department of Labor, Children's Bureau. Washington: Government Printing Office, 1922.

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